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Advancing Integration of Technical Data and Learning Content Management

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Panel Objectives

- **PART 1** - Describe current problems with DoD technical and learning content management

- **PART 2** - Offer strategic vision for improving technical and learning content management

- **PART 3** - Discuss an OSD-funded project that addresses technical and learning content management

- **PART 4** - Q&A on why integrating technical and learning content processes is beneficial

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Part 1

Describe current problems with DoD technical content management

Problem Statements

- Technical training content and human performance requirements are not consistently factored into product acquisition or product life-cycle support during design phase

- Technical information is managed and produced in a variety of formats, not linked together, and not simultaneously managed

- Learning content development tools are not integrated into life-cycle-managed technical databases

- Technical information managers cannot efficiently identify what product support content may be impacted by an engineering change proposal

DoD Content Life-cycle Support

- Documentation is currently
    - Stored in disparate data formats
    - Not supported for a common suite of metadata
    - Not designed for reuse
    - Managed in separate databases
    - Not configuration controlled
    - Not controlled for engineering change proposal (ECP) impact analysis on content

Disparate Databases

TRAINING CONTENT DATABASE

ENGINEERING DATABASE

PRODUCT DATABASE

LOGISTIC DATABASE

PARTS DATABASE

TECH DOCS DATABASE

Part 2

Offer strategic vision for improving technical content management.
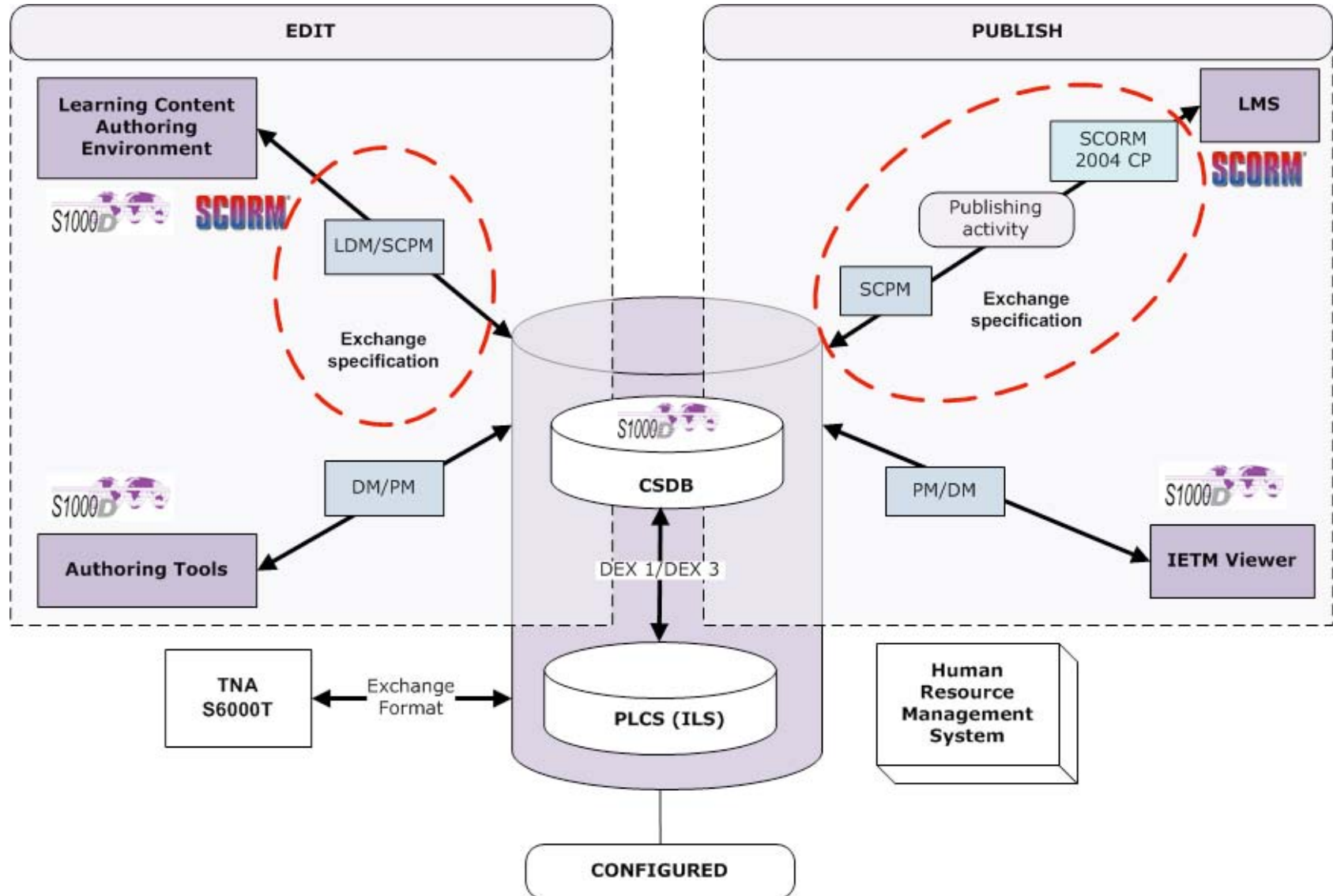
Strategic Vision

Learning data and technical publications data are developed and maintained in a common source database and based on consistent life-cycle support information.

The Main Gap

Lack of communications between SCORM learning content development environments and the technical common source databases

Illustration of the Main Gap

Why Does It Matter?

- Bridging Integrated logistics support (ILS) to the life cycle management of technical learning content will enable the training community to
  - Acquire, manage and produce integrated training and technical information in vendor neutral formats
  - Potential to reduce life-cycle maintenance costs
  - Produce content that is system-accurate
  - Ensure learning content developers are notified of changes before they are deployed

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Part 3

Discuss current OSD-funded project that addresses problem space

S1000D   THE BRIDGE PROJECT   SCORM

Bridge Project in Support Of ADL Initiative

- Ties learning to products, authoritative sources, and work for Littoral Combat Ship Mission Package Program
  - Integrates any learning content development tool with any authoritative source database using an API data exchange specification
  - Provides ability to rapidly adjust learning content in response to changing operational environment
  - Optimizes the development process for content reuse
  - Facilitates integration of technical learning content into life-cycle support

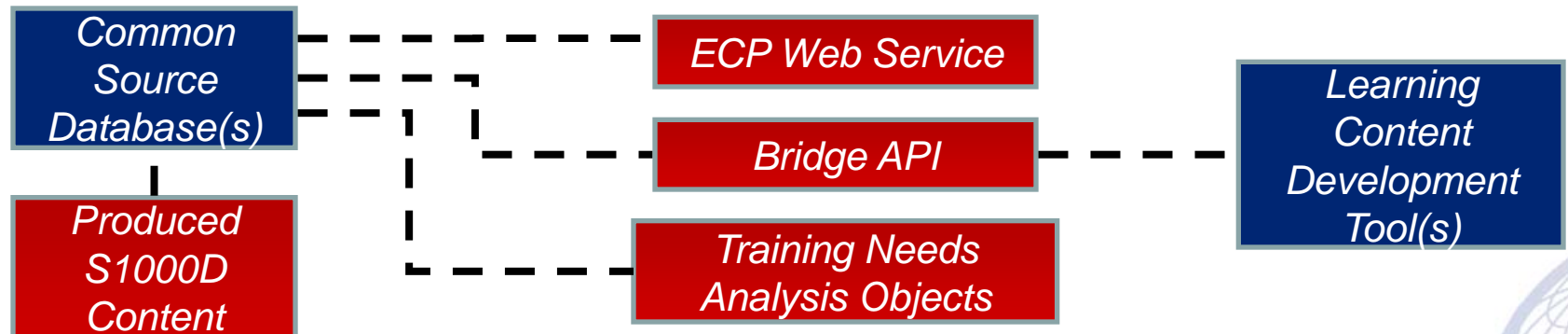| Goal	Requirement Addressed
Linking maintenance and operational requirements to training requirements	(5.3 – *training needs analysis objects*)
Avoiding proprietary data lock-in via industry data standards	(5.4/5.5 - *S1000D XML for all data*)
Open architecture to support scalability and multi-use	(5.10 - *ECP Web Service*)
Foster and demonstrate interoperability	(5.2 - API between CSDB and learning content development environment)

Addresses Product Training Requirements

- **PROBLEM:** Technical training content and human performance requirements are not consistently factored into product acquisition or product life cycle logistics during ILS planning
  - **OBJECTIVE:** Factor training and human performance into life-cycle support
    - **Action:** Develop training needs analysis objects that can be mapped to maintenance and operational analysis
    - **Action:** Map human performance and instructional design metadata to lesson plan and learning materials

Addresses Training Content Production

- **PROBLEM:** Technical product information is managed and produced in a variety of formats, not linked together, and not simultaneously managed
    - **Objective:** Unify the management and production of training content to all product information
        - **Action:** Develop a data exchange mechanism for learning content development tools (like AIM) to communicate with technical data common source databases
        - **Action:** Commit all product technical information to a common industry-based data specification.
        - **Action:** Manage all documentation in a common source database accessible through a data exchange mechanism

Addresses Training Content Life Cycle

- **PROBLEM:** Technical product information managers cannot efficiently identify what product support content may be impacted by an engineering change proposal
  - **OBJECTIVE:** Better identify what product information is potentially affected by a product design change
    - **Action:** Introduce product component and sub-component identifiers into technical information metadata
    - **Action:** Create a web service that will search a common source database for component and sub-component metadata stored in content metadata fields

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Part 4 – Q & A

Why is integrating technical data and learning content processes beneficial?

- Why should the training community care about the life-cycle support of training content?
  - Requirements: Reduction in re-work of initial factory training delivered to end-users
  - Life Cycle: Tech/Training data "loop" needs to be tightened to improve training currency
  - Restricted funding: ROI realized across training content lifecycle means $ savings for everyone!

- How is ADL facilitating life-cycle support of learning content?
  - Requirements: Using S1000D to map human performance and job training requirements to technical learning content in a CSDB
  - Life Cycle: S1000D API to bridge learning content developers to S1000D CSDB environment
  - Restricted Funding: Expect to reduce total ownership costs by eliminating redundant or inefficient efforts that occur during "In Service Phase"

TNA Data

Includes measurable criteria for task performance that results in need for LDM with:

Learn Code = H51 = Formative Analysis
Learn Event Code = A = Learning Plan

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There is no place within the LDM schema to properly store and catalog this type of TNA information.

```
<learningPlan>
    <lcNeedsAnalysis>
        <title>
        <description>
        <lcOrganizational>
            <lcGoals>
            <lcNeeds>
            <lcValues>
        <lcWorkEnvironment>
        <lcTask>
```

?

TNA Data

Includes measurable training objectives for a training system, which results in need for LDM with:

Learn Code = T25= Terminal Objective
Learn Event Code = A = Learning Plan

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Minor modification to the LDM schema will result in proper storage and cataloging of this type of TNA information.

Multiple examples exist and modification recommended to fully support all "T" Learn Codes

```
<learningPlan>
    <lcNeedsAnalysis>
        <title>
        <description>
        <lcOrganizational>
        <lcPlanAudience>
        <lcWorkEnvironment>
        <lcTask>
        <lcLearningObjectives>
            <lcTerminalObjective>
                <lcIntellectualSkills>
                    <lcProcedure>
```

Schawn Thropp Q & A

- How can SCORM benefit from harmonization with other standards/specifications to improve lifecycle management of learning content?
  - Identified need for some time - has never been addressed, holistically, by ADL
  - Decrease "time to market" for SCORM community by leverage existing, vetted and proven practice
  - Decrease life-cycle maintenance cost of learning content
  - Identification of change, change control, distribution practices, design-implementation-testing practices

Leslie Lucas Q & A

- How will integration improve the design, life-cycle management, delivery, and relevance of learning content?
  - Requirements: Mission focus means expanding what and how learning content is delivered
  - Life Cycle: Changes to equipment and publications impacts learning content maintenance
  - Restricted funding: Standardization is cost effective

Tom Archibald Q & A

- How does the end user benefit from the integration of tech data and training?
  - Requirements: Faster access to curriculum
  - Life Cycle: Better links to OJT
  - Restricted funding: Training improved; overall training less affected (if not at all) by restricted funding due to improved processes

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Questions or Comments?

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